REMARKS

This Amendment is in response to the Office Action dated June 19, 2003. Claims 1-59 remain pending in the present application. Claims 1, 18, 30-34, 38, 44-47, 51, and 57-59 are rejected. Claims **** have been changed by this amendment.

The 102 Rejections

The Examiner rejected claims 30, 31, 44, 45, 57, and 58 under 35 U.S.C. 102(b) as being anticipated by Beier et al. '820 ("Beier"). Applicant respectfully traverses. Claim 30, amended for clarification, recites a method for reorganizing a database table online, including a vacate move step to move data records from move pages in the table to free space in other pages of the database table, and a fill move step to move data records into move pages in the table.

Beier describes a process in which, during a reorganization process, data elements of a data set are copied to a different partition or new data set (col. 15, lines 25-27), such that the data set is "recreated" in the new data set (col. 15, lines 15-20). Beier's reference to a data element being "moved," as in col. 5, lines 1-6, indicate that the data element is being moved to a new data set.

In contrast, the present invention in claim 30 recites a "vacate move step," which, as indicated in Applicants' specification on page 13, lines 9-12, refers to the data in a defined set of pages in a database table being relocated to free space in other pages of the same database table in which the data was originally stored, not a different data set or partition. This is clarified in the amendment to claim 30 made herein. Beier's method of copying data elements to a new, reorganized data set is similar to the prior art creation of a shadow table as described in Applicants' specification, and has the disadvantages of requiring large amounts of data storage capability to store the new data set and causing the data to be unavailable for some operations (such as updates

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and scanners) during the replacement time of the old data set with the reorganized data set and/or causing degradation in performance during the reorganization. Beier does not disclose or suggest the moving of data records in a database table to free space in other pages of that database table, as recited in claim 30.

Furthermore, Applicants' claim 30 recites a fill move step, which moves data records into the move pages of the table. Beier does not disclose such a fill step into move pages in the same table, since Beier discloses moving data elements to a new, recreated data set or partition. Claim 30 is therefore believed patentable over Beier.

Claim 31 is dependent on claim 30 and is therefore patentable for at least the same reasons as claim 30, and for additional reasons.

Claim 44 recites a computer readable medium including program instructions implementing steps for reorganizing a database table online, including a vacate move step and a fill move step. Similarly as explained above for claim 30, Beier does not disclose or suggest a vacate move step to move data records from move pages in the table to free space in other pages in the same table, nor a fill step to move data record move pages. Claim 44 is therefore patentable over Beier. Claim 45 is dependent on claim 44 and is patentable over Beier for at least the same reasons as claim 44, and for additional reasons.

Claim 57 recites a computer system for reorganizing a database table online, including means for carrying out a vacate move step and means for carrying out a fill move step. Similarly as explained above for claims 30 and 44, Beier does not disclose or suggest a vacate move step to move data records from move pages in the table to free space in other pages in the same table, nor a fill step to move data record into move pages. Claim 57 is therefore patentable over Beier. Claim 58 is dependent on claim 57 and is patentable over Beier for at least the same reasons as claim 57,

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and for additional reasons.

The 103 Rejections

The Examiner rejected claims 1, 18, 32-34, 38, 46, 47, 51, and 59 under 35 U.S.C. 103(a) as being unpatentable over Beier. Applicant respectfully traverses. Claim 1 recites a method for reorganizing a database table online, including moving a subset of records within the database table, flagging each moved record as a reorganization record, creating a reorganization pointer record at the initial location of the moved record, and establishing scanner process constraints.

In contrast, Beier discloses moving one or more data elements of an (old) data set to a different or "new" data set or partition (col. 15, lines 25-27), such that the old data set is "recreated" as the new data set (col. 15, lines 15-20) and the old data set is eventually abandoned when the reorganization is complete. Beier's reference to a data element being "moved," as in col. 5, lines 1-6, indicate that the data element is being moved to a new data set and is not the movement of data elements within a database table. As explained above with reference to claim 30, Beier's method has the disadvantage of requiring significantly more data storage capability and can slow or limit access to and performance of the database during reorganization. Applicant's method is not moving a subset of records to a new data set or partition.

Furthermore, claim 1 recites that a reorganization pointer record is created for each moved record at the initial location of the moved record. In contrast, Beier installs a pointer to the new record location in a locator file ("Indirect List Entry (ILE)") (col. 5, line 65 to col. 6, line 4) and uses a reorganization number to select between the old and new pointers in the locator file (col. 14, lines 17-38). There is no disclosure or suggestion in Beier to create a reorganization pointer record at the initial location of the moved record in the abstract, as stated by the

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Examiner, nor in the other sections of Beier's disclosure.

Furthermore, claim 1 recites that scanner process constraints are established based on whether a scanner process is commenced prior to or after the moving. As explained in Applicants' specification (e.g., page 20, lines 8-23, etc.), this shows that scanner processes can occur prior to or after reorganization move steps, i.e., during reorganization processes. The constraints permit scanning processes to occur prior to or after reorganization move steps without undesired consequences, such as, for example, the scanners missing or duplicating data. Beier, in contrast, does not disclose or suggest performing scanning processes during reorganization at all, but merely allows read accesses.

The Examiner stated that it would be obvious to incorporate a scanner process in Beier to improve data availability. The Examiner stated that Beier discloses using direct pointers to result in a multi-step reorganization process, and a prefix update utility. However, the multi-step reorganization process that Beier mentions at col. 3, lines 37-46 and col. 4, lines 1-7 is described as keeping the database unavailable for a long period of time, thus indicating that scanning processes are not allowed during that reorganization process. Furthermore, col. 15, lines 37-50 of Beier, cited by the Examiner, describe a read access of data elements by a user, but mention or suggest nothing about scanning processes during reorganization. Beier nowhere suggests such scanning, and Beier nowhere mentions how such scanning can continue from the old data set into the reorganized, new data set. Beier does not address this issue because the Beier method must make the data set being reorganized unavailable to scanners, as indicated in col. 7, lines 26-30 and col. 11, lines 42-45; or Beier must synchronize the incrementing of of the reorganization number with the absence of scanners. Nowhere in Beier is a scanning process suggested to be possible prior to and after a move of data during a reorganization process. Applicant therefore

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believes that claim 1 is patentable over Beier.

Claim 34 recites a computer readable medium containing program instructions for reorganizing a database table online, and including steps similar to those of claim 1. As explained above, Beier does not disclose or suggest these steps, and claim 34 is therefore patentable over Beier.

Claim 47 recites a computer system for reorganizing a database table online, including means for moving a subset of records, means for flagging each record, means for creating a reorganization pointer, and means for establishing scanner process constraints similar to the limitations of claim 1. Claim 47 is therefore believed patentable over Beier for at least similar reasons as explained above for claim 1.

Claim 18 recites a method for reorganizing a database table, including a vacate move step, a vacate clean up step, a fill move step, and a fill clean up step. In contrast, Beier does not disclose these features. For example, Beier does not disclose a vacate clean up step; col. 1, lines 36-39 recited by the Examiner merely mentions the adding and deletion of data elements by users, not a vacate clean up step. Furthermore, Beier does not disclose or suggest a fill clean up step as recited in claim 18, where clean up and move steps are synchronized to commence based on query launching scanner processes, i.e., the scanner processes can be performed during the reorganization of the database table. The Examiner stated that Beier includes using direct pointers resulting in a multi-step reorganization process, a prefix utility, and that the work files are combined into a sort. However, col. 3, lines 37-63 of Beier indicate that the database is unavailable during the multi-step reorganization process, such that no queries launching scanner processes are possible during reorganization as recited in claim 18. It would not be obvious to include a scanner process during reorganization in Beier, as explained above, e.g., because Beier

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gives no suggestion how to continue a scanning process from the old data set into his reorganized, new data set. Applicant therefore believes that claim 18 is patentable over Beier.

Claim 38 recites a computer readable medium containing program instructions for reorganizing a database table online, and including steps similar to those of claim 18. As explained above, Beier does not disclose or suggest these steps, and claim 18 is therefore patentable over Beier.

Claim 51 recites a computer system for reorganizing a database table online, including means for performing a vacate move step, means for performing a vacate clean up step, means for performing a fill move step, and means for performing a fill clean up step similar to the limitations of claim 18. Claim 51 is therefore believed patentable over Beier for at least similar reasons as explained above for claim 18.

Claim 32 is dependent from claim 30 and is patentable for at least the same reasons as claim 30 and for additional reasons. For example, claim 32 recites move steps synchronized with query processes launching scanners. As explained above, Beier does not teach or suggest scanners used during a reorganization process. Claim 46 recites a computer readable medium and including a step similar to that of claim 32. As explained above, Beier does not disclose or suggest this step, and claim 46 is therefore patentable over Beier.

Claim 33 is dependent on claims 32 and 30 and is patentable for at least the same reasons as its parent claims, as explained above, and for additional reasons. Claim 59 is dependent on claim 57 and is patentable for at least the same reasons as claim 57, as explained above, and for additional reasons.

Applicant therefore respectfully requests that the rejection of claims 1, 18, 32-34, 38, 46, 47, 51, and 59 under 103(a) be withdrawn.

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In view of the foregoing, Applicant submits that claims 1-59 are patentable, and respectfully requests reconsideration and allowance of the claims as now presented.

Applicants' attorney believes this application in condition for allowance. Should any unresolved issues remain, Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted,

_____***DRAFT***___

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